California ISO
Your Link to Power



California Independent
System Operator

Dariush Shirmohammadi
Director of Regional Transmission – South
(916) 608-1113

September 7, 2006

Mr. Rodney Winter
Senior Energy Administrator
San Diego Gas & Electric Company
8316 Century Park Court, CP52A
San Diego, CA 92123

**Subject: South Bay Re-Power Generation Interconnection Facility Study Review**

Dear Mr. Winter:

The California ISO (CAISO) has reviewed the Interconnection Facility Study (IFS) conducted by San Diego Gas and Electric Company (SDG&E) for the South Bay Project (Project), as requested by the generation developer, LS Power, who has recently purchased the Project from Duke Energy2.. The Project will be located south of the existing South Bay Power Plant in the city of Chula Vista. It will be a 650 MW combined cycle power plant that will replace the retiring existing South Bay generation. The planned commercial operation date for the South Bay re-powered generation is January 2010 with the testing starting in August 2009. The project will consist of two gas and one steam turbine generators. The existing South Bay Substation will be moved to a new location and expanded to the 230 kV level. The project will be connected to three voltage levels, 69, 138 and 230 kV.

The SDG&E studies showed that to deliver the full output of the plant under the conditions studied, the project's developer would not be responsible for any deliverability upgrades. The required system upgrades to accommodate the Project include looping the new Miguel-Old Town 230 kV transmission line into the Project's switchyard and Direct Assignment Facilities to interconnect the Project. The study also determined that some aspects of the Project might impact the tax-exempt status of the interest on the outstanding Local Furnishing Bonds (LFB).

The information provided in the IFS is not sufficient for the CAISO to grant final interconnection approval to the South Bay Re-powered Generation Project. The following additional information needs to be provided for that purpose (more details in the Attachment):

1. Measures to mitigate overloads for the Category B and Category C contingencies and justifications that these measures are sufficient to accommodate the Project. No capital projects were proposed to mitigate these overloads in the IFS report.

2. Plan of service for the downtown San Diego that exclude the 138 kV bus at the South Bay Substation. This plan is required to assess the need for the 138 kV bus at the South Bay Substation and to evaluate the issue of the impact of the South Bay re-powering on LFB.

3. Explanation on how SDG&E intends to use the extra circuit breaker positions designated in the initial and ultimate substation design.

If you have questions about the CAISO review of this study, please contact Irina Green at (916) 608-1296 (igreen@caiso.com) or myself at (916) 608-1113 (dshirmohammadi@caiso.com).

Sincerely,

***(Original signed by Dariush Shirmohammadi)***

Dariush Shirmohammadi
Director of Regional Transmission – South

DS/IG:pjp

Attachment

cc: Ali Amirali (LS Power) via email, AAmirali@LSPower.com
Rodney Winter (SDG&E via e-mail, rwinter@semprautilities.com )
Linda Brown (SDG&E via e-mail, lpbrown@semprautilities.com)
Tim Allen (SDG&E via e-mail, TAllen@semprautilities.com)

Armando Perez (ISO)

Judy Nickel (ISO via e-mail)
Dennis Peters (ISO via e-mail)
Tom French (ISO via e-mail)
Regional Transmission - South (ISO via e-mail)
Laping Ng (CEC)

## ATTACHMENT

The attachment provides a summary of the project, along with CAISO comments.

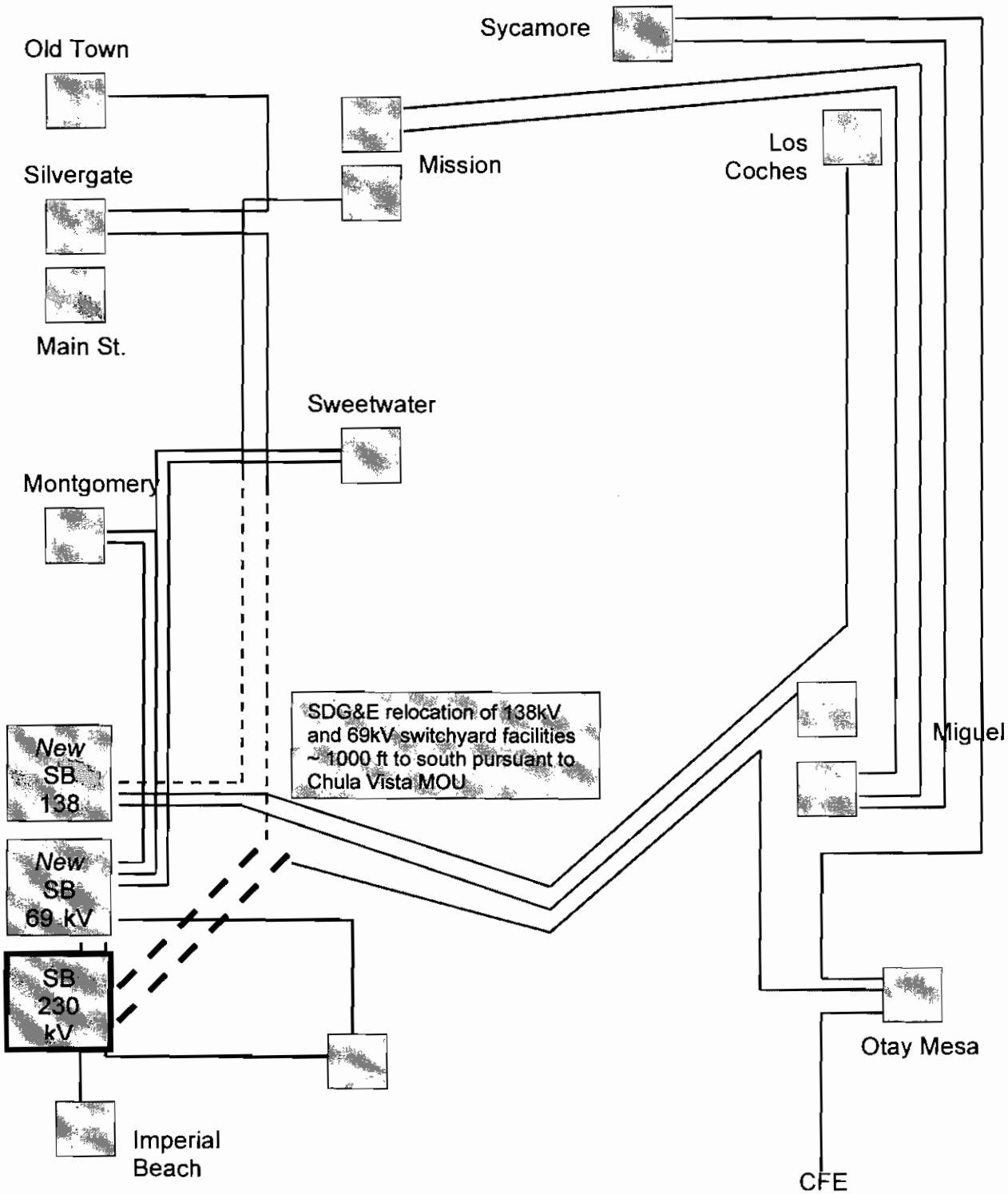
**Project Overview**

The proposed project will be located south of the existing South Bay Power Plant in the city of Chula Vista. It will be a 650 MW combined cycle power plant that will replace the existing South Bay generation facilities after the existing plant retires. The planned commercial operation date for the South Bay Re-powering Project is January 2010 with the testing starting in August 2009. The project will consist of two gas and one steam turbine generators. An alternative of the generation units interconnection that was selected after the preliminary studies consists of one 165 MW gas unit connected to the 69 kV bus, the second 165 MW gas unit connected to the 138 kV bus and the 320 MW steam unit connected to the future 230 kV bus.

The re-powered power plant will be connected to the re-located South Bay Substation, south of the existing substation. The new 230 kV bus will be connected to the system by looping the future Miguel-Silver Gate-Old Town 230 kV line, presently in construction. There will be no transformer between the 230 kV bus and other voltages, only a 138/69 kV transformer. Each unit will have a separate step-up transformer. The one-line diagram of the South Bay interconnection is shown on the next page.

Duke Power, the original owner of the existing South Bay Power Plant, originally initiated the South Bay Re-powered Generation Project. In 2006, LS Power purchased the South Bay Power Plant. The CAISO approved the South Bay Re-powered Generation Project on a preliminary basis in October 2005 based on SDG&E System Impact Studies (SIS). Since that time, there have been changes in the assumptions in the system configuration impacting this project. These changes include the ENPEX generation project (Sycamore Canyon Combined Cycle), which is ahead of the South Bay in the interconnection queue. ENPEX's development was unclear at the time of the SIS, but now it regained its position in the queue. Several new transmission projects were also approved by the CAISO since the South Bay SIS was completed. These include looping the Escondido-Encina-San Luis Rey 230 kV line into the Palomar switchyard and installation of the 230/138 kV Penasquitos transformer. Also, 500 kV Sun Path transmission project was approved by the CAISO in July 2006. In addition, the data used by SDG&E in preparation of the SIS were lost. Therefore, all the system analysis studies were repeated in the Facilities Studies using the latest set of models and the system assumptions. SDG&E also developed cost estimates for the Project interconnection and the Reliability Upgrades as a part of the Interconnection Facilities Study.

**South Bay Re-Power Interconnection**



**Summary of the Interconnection Facilities Study (IFS) Results**

SDG&E performed power flow studies for the heavy summer cases of 2010, which included high import and low generation. Different generation dispatch scenarios were evaluated. These scenarios included: the ENPEX (Sycamore Canyon Combined Cycle) Project dispatched at full output (750 MW) and the ENPEX project not dispatched, as well as variations in the dispatch of other generating units in SDG&E. All Category B (single outages) and applicable Category C (multiple outages) contingencies were studied.

The IFS did not identify any overloads on the SDG&E system under normal conditions with all facilities in service.

Under single contingency conditions, the study identified overload of the Sycamore Canyon-Miguel Tap 230 kV transmission line when the ENPEX project was not dispatched, overload of the Sycamore Canyon-Carlton Hills 138 kV line and East Gate-Rose Canyon 69 kV line with the ENPEX project dispatched and overload of the Sycamore Canyon 230/69 kV transformer bank #70 regardless of the ENPEX dispatch. Even if the study report designated these overloads as caused by the South Bay Re-power Project, no capital projects were proposed. It was explained either by the need for the upgrades regardless of the South Bay Re-power Project, or by small amount of observed overloads.

Under Category C contingencies, the studies showed the Project causing overloads on the Sycamore Canyon-Carlton Hills 138 kV line, East Gate-Rose Canyon 69 kV line and Miguel-Jamacha 69 kV line No.2.

The dynamic stability studies did not identify any negative impact of the South Bay Re-power Project.

The short circuit studies indicated that no circuit breakers would be overstressed due to addition of the Project.

SDG&E also developed cost estimates for the 69, 138 and 230 kV switchyard equipment and looping the Otay Mesa -Silver Gate 230 kV transmission line into the Project's switchyard. Additional costs were estimated for the interim interconnection to the existing switchyard.

The report stated that to interconnect the South Bay Re-power project, Gas Insulated Substation (GIS) switchyard will be required due to the space constraints. The cost estimates were provided for the Air Insulated Substation (AIS), and the cost differential was considered to be the responsibility of the generation developer. The reason for it was explained by the need for the 138 kV facilities as only for the Re-powered South Bay Project use. In the report, SDG&E informed that the relocated South Bay Substation would be comprised only of the 230 kV and 69 kV facilities if it would be only for the SDG&E use, and not for the LS Power. However, it is not clear to the CAISO as to how SDG&E would eliminate the 138 kV bus at the South Bay Substation with or without the re-powered South Bay plant. Presently, five transmission lines and one transformer are connected at this bus. The 138/69 kV transformer provides connection between the two buses to deliver power from the existing South Bay plant. There are plans to remove two transmission lines (to the Main Street Substation) as a condition of the Memorandum of Understanding (MOU) between SDG&E and the City of Chula Vista. Up to date, the CAISO has not received any information regarding SDG&E's plans for the three remaining transmission lines

(to the Mission, Los Coches and Telegraph Canyon Substations), if the 138 kV bus is removed from the South Bay Substation as SDG&E has suggested.

The SDG&E assessment determined that some aspects of the South Bay Re-powering Project might impact the tax-exempt status of the interest on the outstanding Local Furnishing Bonds (LFB). These aspects will be resolved by the generation developer and SDG&E when they work on the filing an Application for Interconnection and Transmission Order pursuant to Section 211 of the Federal Power Act.

**CAISO Comments**

In the review of the IFS, the CAISO encountered several issues that need to be resolved before the final approval to the Project can be granted.

1. The studies identified several overloaded facilities, which appeared to be caused by the Project. However, no mitigation measures were proposed. The report stated that the generation developer will not be responsible for the upgrades. Even if SDG&E plans to upgrade these facilities regardless of the South Bay generation project development, description of these upgrades need to be included in the report. Studies need to be performed to ensure that these upgrades are sufficient to accommodate the project. Mitigation of the overloads caused by the Category C contingencies also needs to be provided even if this mitigation does not include the facilities upgrade.

2. The report stated that the 138 kV South Bay bus was not needed to serve the SDG&E downtown customers. However, no plan of service for the downtown San Diego was provided. This plan is required to assess the need for the 138 kV bus at the South Bay Substation and to evaluate the issue of impact of the South Bay re-powering on the LFB.

3. The report included design of the new South Bay Substation layout. The initial design included an additional circuit breaker for one new 69 kV transmission line. The ultimate design included two additional circuit breakers for 230 kV transmission lines, another circuit breaker for a second new 69 kV line and one additional circuit breaker for a 138 kV transmission line. These extra line positions add to the size of the substation. More details need to be provided on how SDG&E intends to use these circuit breaker positions and what future needs these additional lines will satisfy.

The final approval of the Project will be granted when this information is provided.

**Distribution for South Bay (06-AFC-3)**

From: Bill Pfanner, Project Manager (please return this distribution cover sheet to me)

Date: Oct 2, 2006

RE: South Bay

| | | |
|---|---|---|
| ☒ **Docket** | ☐ **Proof of Service** | ☐ **Docket – Internal Only** |
| | ☒ **Web** | ☐ **Reference** |
| **Distribute Internally to:** | | |
| **Management** | **Environmental / Eng. Staff** | **CEC Contractors** |
| ☐ E. Allen | ☐ J. Reinhardt (biology) | ☐ B. Bastian (cultural) |
| ☐ R. Johnson | ☐ G. Taylor (plume) | ☐ Dal Hunter (geo/paleo) |
| ☐ T. O'Brien | ☐ A. Stennick (land use)<br>☐ J. Adams (traffic) | ☐ Alvin Greenberg (hazmat handling, pub health, worker safety) |
| | ☐ J. Diamond (socioecon) | ☐ S. Khoshmashrab (noise) |
| | ☐ R. Latteri (soils, water)<br>☐ G. Taylor (air)<br>☐ D. Flores (visual) | ☐ M. Stephens (waste)<br>☐ J. Diamond (sociology) |
| **Engineering** | | |
| ☐ S. Baker (facility design) | ☐ G. Lesh (efficiency, reliability) | |
| ☐ A. Greenberg (hazmat handling, worker safety, pub health) | ☐ O. Odoemelam (TSN) | ☒ L. Ng (TSE) |
| **Legal** | | |
| ☒ K. Willis | | |
| ☐ A. Ichien | | |
| **Compliance** | | |
| ☐ C. Bruins | | |

Send docked copy - hard & email back to Bill

I'll put on web. Thanks